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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MOTOKI NUMATA

Appeal 2009-005846
Application 10/713,013
Technology Center 1700

Oral Hearing Held: Tuesday, August 11, 2009

Before JAMES T. MOORE, TERRY J. OWENS and PETER KRATZ,
Administrative Patent Judges

ON BEHALF OF THE APPELLANTS:

THOMAS M. CUNNINGHAM, PH.D., ESQUIRE
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1 The above-entitled matter came on for hearing on Tuesday,
2 August 11, 2009, commencing at 1:03 p.m., at the U.S. Patent and
3 Trademark Office, 600 Dulany Street, 9th Floor, Hearing Room A,
4 Alexandria, Virginia, before Laurel P. Platt, Registered Diplomate Reporter,
5 Notary Public.

6 USHER ON DUTY: Good afternoon. Calendar number 32,
7 appeal number 2009-5846, Mr. Cunningham.

8 MR. CUNNINGHAM: Good afternoon.

9 JUDGE MOORE: Good afternoon, Mr. Cunningham.

10 Welcome to the Board.

11 MR. CUNNINGHAM: Thank you.

12 JUDGE MOORE: It's a pleasure to have you here. Where do
13 you hail from?

14 MR. CUNNINGHAM: Originally?

15 JUDGE MOORE: No, now. Today.

16 MR. CUNNINGHAM: Oblon Spivak.

17 JUDGE MOORE: Oh, right up the street then.

18 MR. CUNNINGHAM: That's right.

19 JUDGE MOORE: Okay. Well, welcome. You have 20
20 minutes. I assume you know the procedure.

21 MR. CUNNINGHAM: Yes.

22 JUDGE MOORE: Spend your 20 minutes as you see fit.

23 MR. CUNNINGHAM: Okay. The invention in this case is an
24 improved method for making terephthalic acid. Terephthalic acid is a

1 compound that's used as a substrate in making plastic, such as plastic bottles,
2 Coke bottles, Pepsi bottles.

3 The claim process reduces energy costs and environmental
4 impact at making this compound by utilizing internal energy in a pressurized
5 reaction

6 mixture to dry the product. This is discussed on page 3 of the
7 Specification.

8 The problems with prior art processes include the high-
9 evaporation latent heat of cake-attached liquids, such as water, necessitating
10 further energy expenditures for conventional drying processes to obtain a
11 cake, terephthalic acid crystal cake with 10 percent or less of the cake-
12 attached liquids.

13 A selection of a particular reaction medium is made along with
14 particular process steps, such as a depressurization step.

15 Small energy conservations obtained by the process, when
16 applied to an industrial-scale process of making terephthalic acid, can
17 provide significant savings in energy, thus reducing costs as well as
18 environmental impact.

19 Claim 25 is the independent claim, and the key step I'd like to
20 discuss is step C. Step C requires that the drying of the resulting cake by
21 moving it into a compound recovery zone under conditions in which the
22 internal energy released by the movement of the compound into the
23 compound recovery zone evaporates the cake-attached liquid.

24 The cake-attached liquid resulting from drying step C is not
25 more than 10 percent based on the solids content of the terephthalic acid.

1 JUDGE KRATZ: How does that step accomplish the
2 movement such that you are using just the internal energy? Are you just
3 going across the valve with the cake? Do you pressurize the cake from the
4 step B? Is that what happens?

5 MR. CUNNINGHAM: Well, it's moving it from a higher
6 pressure. Step B, for instance, is done at a pressure higher than atmospheric
7 pressure.

8 JUDGE KRATZ: So how would that differ from what the
9 secondary reference Beard teaches?

10 MR. CUNNINGHAM: Where they dry it on a roller and --

11 JUDGE KRATZ: They move it into a lower pressure chamber
12 as well.

13 MR. CUNNINGHAM: There is a flashing component in the
14 Beard reference. Beard, pages 4, 8 and 12 describe increasing the speed of
15 drying by a flashing process, but there's no disclosure of it increasing drying
16 to the extent required by the claim.

17 Claim 25 requires that not more than 10 percent of the solids --
18 the cake-attached liquid be present in not more than 10 percent of the solid
19 content. This is not disclosed by Beard.

20 JUDGE KRATZ: Why would you not expect to get that same
21 extent of drying with the Beard process? What is being done differently in
22 your process that allows you to get that 10 percent?

23 MR. CUNNINGHAM: Okay. Beard is a reference that teaches
24 an apparatus for drying products, like terephthalic acid.

1 Amongst the process conditions is selecting particular cake-
2 attached liquids. This is emphasized, for instance, in claim 27, claim 28, and
3 claim 29, dependent claims, which require a selection of particular washing
4 liquids or particular reaction media that have particular evaporation latent
5 heat criteria. This particular point hasn't been addressed in the rejection.

6 JUDGE KRATZ: Would water meet that requirement, 300
7 kilocalories per kilogram that you refer to in independent claim 27?

8 MR. CUNNINGHAM: I thought water was 88 kilocalories.

9 JUDGE KRATZ: 88. So that's not more than 300. So it
10 wouldn't --

11 MR. CUNNINGHAM: Don't quote me on the 88. I'm
12 speculating about that, but the rejection doesn't address that point. If water
13 did meet that criteria, it's still not addressed in the rejection.

14 The primary reference, Turner, is admitted not to disclose this
15 solid liquid separation step by reducing pressure.

16 Beard is what's cited as disclosing the flashing component to
17 increase the speed of drying.

18 The Examiner indicates on page 4 of the Examiner's Answer
19 that, quote, this in fact dries the cake and refers on page 5 to engineering
20 fundamentals of removing liquids by depressurization. However, Beard
21 does not disclose completely drying the terephthalic acid product because it
22 contemplates subsequent drying steps on pages 4 and 5 and at the top of
23 page 13.

1 JUDGE KRATZ: 10 percent would still allow for some
2 subsequent drying; right? The claim just requires that the drying be down to
3 the point where you have 10 percent liquid remaining.

4 MR. CUNNINGHAM: That's correct. It depends on the use of
5 the product. Maybe perhaps in certain subsequent processes, you'd want
6 something that was not completely dry.

7 JUDGE KRATZ: Claim 25 doesn't exclude further drying to
8 accomplish going from, say, 8 percent to 3 percent.

9 MR. CUNNINGHAM: That's correct. And the Examiner
10 makes those arguments on page 4 of the Examiner's Answer where he
11 indicates there is no limitation in the claim that the material after
12 depressurization is not transported to a dryer. There is no limitation about
13 the initial liquid content or the exact dryness after the process.

14 However, there's no disclosure of drying it to 10 percent or less
15 in the prior art.

16 JUDGE OWENS: Why wouldn't one of ordinary skill in the art
17 who wanted a dryer product or a product dried to less than 10 percent, do
18 that using the Beard reference?

19 MR. CUNNINGHAM: Why not use flash drying to --

20 JUDGE OWENS: To go down at least to 10 percent.

21 MR. CUNNINGHAM: Well, is there an expectation in the
22 prior art that you could reduce it to that level.

23 JUDGE OWENS: Why not?

24 MR. CUNNINGHAM: Well, the Examiner hasn't made the
25 case. It's not in the --

1 JUDGE OWENS: You heat it up, and then you flash it to a
2 lower pressure, and the liquid evaporates. Why wouldn't you expect it to go
3 down to 10 percent or below?

4 MR. CUNNINGHAM: I think you might expect some drying,
5 but I don't think it's a reasonable expectation based on decided art. Turner
6 doesn't provide an expectation of success for that step. So we are really
7 addressing the Beard reference which teaches the flashing step.

8 Now, there is no suggestion in the rejection that there was any
9 expectation that Beard would dry the sample to that extent.

10 JUDGE OWENS: Is there any extent of drying that you consider to
11 be suggested by Beard?

12 MR. CUNNINGHAM: I think Beard addresses -- teaches that
13 general generic step of flash drying. I don't see a percentage, particularly in
14 that 10 percent or less, in Beard.

15 JUDGE OWENS: Or any other percentage.

16 JUDGE KRATZ: The method of making terephthalic acid in
17 the prior art taught by Turner and Beard also addresses making that same
18 acid.

19 The materials that they used to make it would appear to be the
20 same that you're using. The raw materials would be the same. They do it
21 under high pressure, like you do, and at elevated temperature. It would
22 appear to be a temperature, given the high pressure, that would be above
23 what would normally be considered an evaporation point or boiling point but
24 for the fact that you have the high pressure.

1 So you have common conditions that are going on in the
2 reaction part of it. And then you have this pressure let-down that Beard
3 suggested as an alternative way of drying.

4 When you go through from these phases, going through the
5 same kinds of conditions that you are operating under, and you use that let-
6 down using the common equipment -- I don't know that you're using any
7 special equipment -- why wouldn't you expect to get the same level of
8 drying?

9 MR. CUNNINGHAM: Well, the other aspect of the invention,
10 for instance, in claim 27 is selecting particular cake-attached liquids that can
11 be removed to the extent of 10 percent or less. It's not just the flashing step,
12 but it's the combination of the other process steps, including what the cake-
13 attached liquid is in combination with the flashing.

14 JUDGE KRATZ: And I think you just mentioned to me earlier
15 that that would include water, for example, would meet that less than 300
16 kilocalories per kilogram requirement of claim 27; right?

17 MR. CUNNINGHAM: Assuming that water has 88
18 kilocalories; the latent heat evaporation of water is 88. That might be --

19 JUDGE KRATZ: That would be one of the materials that
20 would be present as either a washing liquid or as a medium.

21 MR. CUNNINGHAM: In the examples, I think both water and
22 acetic acid are disclosed.

23 JUDGE KRATZ: And acetic acid would also meet that
24 kilocalorie requirement?

1 MR. CUNNINGHAM: I don't know. I would have to check
2 the record to answer that.

3 So our primary argument is that Turner is admitted not to
4 disclose that particular step C; that Beard only generically discloses that
5 process step but does not provide a reasonable expectation of reducing the
6 level of cake-attached liquids to 10 percent or less; and the particular
7 limitations in claims 27 to 29 haven't been addressed in the rejection.

8 Does the Board have any other questions?

9 JUDGE MOORE: I just have one quick question. Of the steps,
10 step A with pressure, step B with the separation, and C step with the drying,
11 are these three steps in and of themselves known in the art by one of
12 ordinary skill in the art to do? Not necessarily together, but each one of
13 them is a known step?

14 MR. CUNNINGHAM: Well, according to the rejection, steps A and
15 B are taught by Turner, and step C is taught by or at least
16 suggested by the secondary reference.

17 JUDGE MOORE: Let me rephrase it then. Is there any step
18 here that is new, that one of ordinary skill in the art would not have known,
19 would not have been able to do as a matter of routine? I'm not saying that
20 putting them together the way you have. I'm just saying were each of these
21 steps known.

22 MR. CUNNINGHAM: There is particular details in each step.
23 For instance, step B requires reducing the cake-attached liquid to not more
24 than 50 percent. But I think you're asking in the general case --

25 JUDGE MOORE: Right, I am.

1 MR. CUNNINGHAM: Step A, B, and C, are those steps
2 generally known.

3 JUDGE MOORE: Yes.

4 MR. CUNNINGHAM: I think our argument would be based
5 on a combination of these steps that is the invention.

6 JUDGE MOORE: Okay. I understand your argument. Thank
7 you.

8 All right. Thank you very much for your attendance.

9 MR. CUNNINGHAM: Thank you very much.

10 Whereupon, at 1:15 p.m. the proceedings were concluded.